

# PATENT ABSTRACTS OF JAPAN

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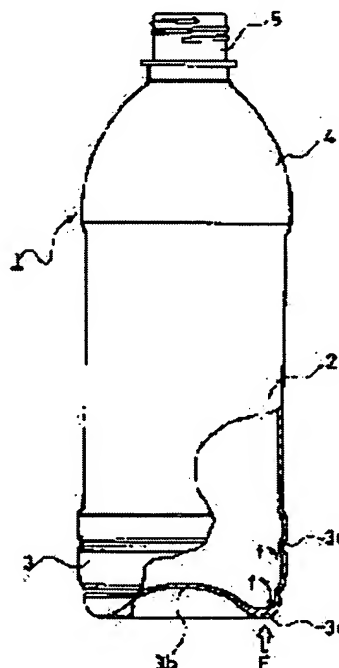
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## (54) EXTREMELY THIN HOLLOW CONTAINER MADE OF SYNTHETIC RESIN

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To obtain a one-piece hollow container which is easy to recycle having stable self-standing ability in a biaxially-oriented-molded hollow container made of thermoplastic resin such as polypropylene or polyethylene terephthalate wherein a wall thickness of the container is formed to be extremely thin and the container has a strong structure against drop impact.

**SOLUTION:** In a hollow container formed with thermoplastic synthetic resin into a bottle-like shape including a neck 5, a shoulder 4, a body 2 and a bottom 3 by biaxially oriented blow molding, the bottom wall 3 is formed to be spherically curved inward. In addition only a contact bottom part 3a is formed to be thick, while the shoulder, the body and the bottom except the contact bottom part are biaxially oriented to be formed to be extremely thin, while a rib 3c shaped like a inward-recessed groove is formed on a bottom outer peripheral wall to deconcentrate and absorb drop impact, thereby providing a self-standing hollow container.



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**CLAIMS**

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**[Claim(s)]**

[Claim 1] While forming thickly only the submergence section of the pars-basilaris-ossis-occipitalis periphery which is the hollow container which fabricated thermoplastic synthetic resin in the shape of [ which consists of a top neck part, a shoulder, a drum section, and a pars basilaris ossis occipitalis by biaxial extension blow molding ] a cylinder, and formed said pars-basilaris-ossis-occipitalis wall in the shape of [ which curved to the inside ] the spherical surface The super-light-gage hollow container made of synthetic resin which is characterized by coming to form the reinforcing rib which carried out biaxial extension of the vessel wall of shoulders other than this submergence section, a drum section, and a pars basilaris ossis occipitalis, came to form in super-\*\*\*\* and made the shape of a concave the peripheral face of said pars-basilaris-ossis-occipitalis wall and which can be become independent.

[Claim 2] Said hollow container is a super-light-gage hollow container made of synthetic resin which was indicated to claim 1 characterized by coming to carry out biaxial extension blow molding of the polypropylene resin and which can be become independent.

[Claim 3] The super-light-gage hollow container made of synthetic resin which is indicated to claims 1 or 2 characterized by coming to form a two or more articles reinforcing rib in the peripheral face of said pars-basilaris-ossis-occipitalis wall and which can be become independent.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the hollow container of super-\*\*\*\* which the vessel wall which carried out biaxial extension blow molding of the thermoplastic synthetic resin carried out biaxial extension blow molding of the thermoplastics, such as polypropylene and polyethylene terephthalate, in more detail with respect to the hollow container of super-\*\*\*\*, and carried out the shape of a cylinder in which a pars basilaris ossis occipitalis has strong structure to a fall impact.

[0002]

[Description of the Prior Art] The hollow container obtained by carrying out biaxial extension blow molding of the polyethylene terephthalate resin (PET) is lightweight, it excels in transparency, and reinforcement is also large compared with the container made of other resin, and there is also thermal resistance, and since there is also little aging and it is safe also from on food sanitation hygiene, the well-known fact is widely adopted as the bevel-use container containing the carbon dioxide gas of a soda pop, cola, and others, and a liquid food container of juice and others. And although the above-mentioned bevel-use container is fabricated by the \*\* form container which usually carried out the cylindrical shape and which can be become independent, it expands with the internal pressure of the carbon dioxide gas contained in an inner solution by the various environmental conditions after being filled up with a drink solution, deforms, and is easy to transform especially a pars basilaris ossis occipitalis, and if it remains as it is, there is a problem of it becoming impossible to be stabilized and to make a container become independent.

[0003] Then, in order to prevent deformation of such a container, reduction of the cost which made thickness of the drum wall of a container thin along with extensive use of a container in recent years although fabricated thickly to which a drum wall can bear the conventional container at internal pressure came to be achieved. By the way, although the container which carried out the cylindrical shape can give the pressure resistance of extent which has also made the drum section wall thin from on the dynamic structure, since a pars basilaris ossis occipitalis has a possibility that it may become impossible to bear a load and a fall impact if it becomes thin, it must be made the pars-basilaris-ossis-occipitalis structure to which thickness had pressure resistance for forming a thin container.

[0004] And in order to strengthen the pars basilaris ossis occipitalis of such a container, as are shown in JP,59-118729,U, JP,62-33529,U, etc., and the pars basilaris ossis occipitalis of a container is shown in an approach, JP,51-53566,A, JP,58-73710,U which are bulged in the shape of a semi-sphere outside, the approach of denting the pars basilaris ossis occipitalis of a container in the shape of a raised bottom to the inside like \*\* for champagne is used abundantly from the former. Although what made the pars basilaris ossis occipitalis of a container like the former the structure bulged in the shape of a semi-sphere can form a vessel wall in closing in since it is the structure which was most excellent in reinforcement, since it cannot be made to become independent in the condition as it is, with the body of a container, the method of equipping the pars basilaris ossis occipitalis of a body with the base cup fabricated on another object is used so that it may indicate to JP,59-118729,U or JP,62-33529,U.

[0005] However, although there is an advantage which can demonstrate high pressure resistance to the pressure from the interior since extension shaping of the bottle which equipped the pars basilaris ossis occipitalis of the body of a container with the base cup is fully carried out by the pars basilaris

ossis occipitalis, a base cup has the fault which serves as a body of a container with cost quantity since the routing of the dedication for equipping with a base cup is needed for the body of a container while fabricating as another member on another object. and for a small container, although it is suitable for the large-sized container, since height becomes high, it is unsuitable for the above-mentioned base cup to have a problem rather from fields, such as saving-resources-izing called for recently since it generally comes out to have fabricated with a different synthetic-resin ingredient from the body of a container and there is, and recycle-izing, and to equip with a base cup in this way.

[0006] Moreover, since the submergence section with what [ annular at the pars basilaris ossis occipitalis ] made the pars basilaris ossis occipitalis of a container like the latter the structure incurvated in the shape of a raised bottom to the inside like \*\* for champagne is formed, it is possible to be able to make a container become independent and to apply also to a small container. However, the \*\* to which sufficient extension actuation for a pars-basilaris-ossis-occipitalis wall is not performed compared with the drum section 2 of a container so that the stereo may be seen to drawing 2, Since it becomes what was inferior in reinforcement since bottom wall core 3b is formed thickly, and annular submergence section 3a which is easy to be shocked on the contrary is fabricated by closing in and becomes the form where reinforcement is the weakest Although the whole vessel wall is formed more thickly than a base cup container or means to form the several many articles reinforcing rib of a lengthwise direction in the wall surface which a pars basilaris ossis occipitalis 3 taking-a-seat section 3a Applies from the lower part of a drum section 2 are taken in order to give pressure resistance There was a fault which forming a reinforcing rib takes time and effort, and spoils design nature for a rib.

[0007] Then, instead of recent years coming and equipping with a pars-basilaris-ossis-occipitalis base cup as mentioned above, the proof-pressure container which carried out bulge shaping of the leg at one, and gave independence nature to the pars basilaris ossis occipitalis of the body of a container formed in the shape of a curved surface, and the so-called dress bottle have come to be adopted so that it may indicate to JP,64-10329,B or JP,5-254529,A. However, the bottom wall of the container which formed the leg in such a configuration Compared with the up wall and drum section wall of a container, it becomes inadequate [ biaxial extension actuation ] and thick. As compared with said wall by which biaxial extension was fully carried out, it is easy to deform, and the locker bottom in which the pars basilaris ossis occipitalis resulting from change of the heat sterilization after filling up with and sealing contents, or the external environment of migration and others carries out bulge deformation, and a pars basilaris ossis occipitalis have the fault of being easy to generate the phenomenon which produces a crack. Again Although such structure is applicable to a large-sized container, it is unsuitable for a small container.

[0008] Then, in the hollow container which the pars basilaris ossis occipitalis of a container was made to curve in the shape of a raised bottom to the inside, and enabled independence of it to it like the above mentioned \*\* for champagne, only the submergence part of a container is formed thickly. It became possible [ the bottom wall section which made it curve inside ] to also give the pressure resistance of same extent as a drum section to a pars basilaris ossis occipitalis by performing extension actuation like a drum section, it found out that it was applicable also to a small container, and the applicant has proposed as JP,58-73710,U previously. Namely, it asks for the relative relation between whenever [ stoving temperature / of parison ], and, whenever [ extension / of a vessel wall ] beforehand. By controlling the temperature of taking-a-seat section 3a of the container pars basilaris ossis occipitalis 3 after extension to the temperature of whenever [ low extension / which becomes thick / whose thickness of the part is the about 4-time abbreviation for the core of a pars basilaris ossis occipitalis 3, and rising wood ], when heating to convention temperature, in order to extend the other sections of drum section 2 grade in a convention As shown in drawing 3 , biaxial extension of the pars basilaris ossis occipitalis 3 of a container can be carried out at R configuration, and the hollow container 1 which has the strong proof-pressure bottom which carried out biaxial extension blow molding of the parison so that it might become thick enough rather than the wall thickness of a drum section 2, a pars basilaris ossis occipitalis 3, and a shoulder 4 about the thick chisel of taking-a-seat section 3a of a pars basilaris ossis occipitalis can be obtained.

[0009] However, although it is possible to make the wall thickness thin compared with the

conventional thing, the hollow container obtained by performing biaxial extension shaping as mentioned above. When the container which there is a limitation also in making wall thickness thin naturally from the reinforcement of a pars basilaris ossis occipitalis, and made wall thickness thin gets a fall impact, the drum sections and shoulders other than a pars basilaris ossis occipitalis explode. There was a fault that the reinforcement to a fall impact was weak, and in forming a super-thin walled vessel, the solution was searched for.

[0010]

[Problem(s) to be Solved by the Invention] The pars basilaris ossis occipitalis of this invention of a container is strong, it has the stable independence nature, and while it forms the wall thickness of a container in super-\*\*\*\*, without a locker bottom and a crack occurring, a vessel wall is made into strong structure also to a fall impact, and it offers [ it is low cost and ] a container with easy recycle in the hollow container which can become independent the dress bottle mold which carried out biaxial extension blow molding of the parison or preforming which consists of thermoplastics, such as polypropylene and polyethylene terephthalate.

[0011]

[Means for Solving the Problem] The hollow container which carried out the shape of \*\* which consists thermoplastic synthetic resin of a top neck part, a shoulder, a drum section, and a pars basilaris ossis occipitalis by biaxial extension blow molding is fabricated. While forming said pars-basilaris-ossis-occipitalis wall in the shape of [ which curved to the inside ] the spherical surface, the submergence section is formed thickly, while carrying out biaxial extension of the shoulder except the submergence section, a drum section, and the pars basilaris ossis occipitalis and forming in super-\*\*\*\*, the rib which carried out the concave to the inside is formed in a bottom outside side face, and the hollow container of the independence mold excellent in fall-proof impact nature is constituted.

[0012]

[Embodiment of the Invention] Like before which the invention in this application was faced making center-section 3b of the pars basilaris ossis occipitalis of a container curve in the shape of a raised bottom to the inside, and carrying out blow molding of the hollow container 1 which can become independent like \*\* for champagne, and was shown in drawing 2. In order not to form thickly core 3b of a pars basilaris ossis occipitalis, without fully extending a pars basilaris ossis occipitalis 3 compared with the drum section 2 of a container. As are shown in drawing 3, and whenever [ parison / which the last mold goods were made to correspond beforehand and was fabricated /, or stoving temperature / of preforming ] is controlled, only taking-a-seat section 3a of a pars basilaris ossis occipitalis is fabricated more thickly than the other sections and it is shown in drawing 1 the wall thickness of a shoulder 4, a drum section 2, and a pars basilaris ossis occipitalis 3 -- super- -- \*\*\*\*\* -- while fully carrying out biaxial extension like, concave-like reinforcing rib 3c is formed in the peripheral face of a pars basilaris ossis occipitalis 3, and while making it absorb impulse force when a container falls, blow molding is carried out to the hollow container 1 in which independence nature is possible.

[0013]

[Example] This invention fabricates polypropylene or polyethylene terephthalate (PET) resin beforehand to preforming of the predetermined configuration which carried out the shape of an outline test tube with injection molding. It carries out [ mold clamp ], after heating this preforming to the temperature in which extension shaping is possible, and setting in the Breaux molding die. While carrying out extension actuation to a lengthwise direction, blow molding is carried out, bulge formation of the preforming is carried out, biaxial extension shaping is performed, and it fabricates to the hollow container possible in independence which has the fall-proof impact nature which has thin-walled structure to which sufficient extension actuation for the \*\* same also in the pars-basilaris-ossis-occipitalis wall made to curve to the inside as shown in drawing 1 as a drum section was performed.

[0014] Namely, it faces fabricating the hollow container 1 which carried out the shape of \*\* which consists of a top neck part 5, a shoulder 4, a drum section 2, and a pars basilaris ossis occipitalis 3. Said pars basilaris ossis occipitalis 3 forms submergence partial 3a thickly while it makes central wall 3c curve to the inside in the shape of the spherical surface and forms it in it. biaxial extension of

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the shoulder 4 except said submergence partial 3a, a drum section 2, and the pars basilaris ossis occipitalis 3 is carried out -- making -- wall thickness -- super- -- \*\*\*\*\* -- two or more articles rib 3c which carried out the shape of a concave to the inside is formed in the lateral surface of a pars basilaris ossis occipitalis 3, and it makes with the hollow container 1 which can become independent at the same time it carries out blow molding like.

[0015] Since the container 1 of this invention which carried out the above configurations gave biaxial extension shaping to the pars basilaris ossis occipitalis 3 as well as a drum section 4 except for submergence partial 3a and raised reinforcement By could form the whole wall thickness in super-\*\*\*\* rather than before, and having formed two or more articles concave rib 3c in the lateral surface of a pars basilaris ossis occipitalis 3 Since the impulse force which impulse force is absorbed by the two synergistic effects of a flexible operation of a rib part and the force distribution f to the inside, and carries out a direct action to a vessel wall is eased even if it drops a container, a container does not explode. Since especially the hollow container of the invention in this application fabricated using polypropylene resin is made in good health [ extension reinforcement is large and ], it becomes possible [ making a vessel wall very thin compared with the conventional thing ], and can be easily crushed at the time of abandonment.

[0016] As stated above, the invention in this application except having formed a little thickly only the taking-a-seat section of the bottom wall periphery section which made the pars basilaris ossis occipitalis of a hollow container curve in the shape of a raised bottom to the inside Since sufficient extension actuation for a vessel wall at large is performed and thickness is made thin Since it has structure which the reinforcement of a vessel wall is increasing compared with the conventional hollow container, and prepares the concave reinforcing rib of a circumferencial direction only in a bottom outside peripheral wall, and carries out distributed absorption of the fall impulse force, it is suitable also for a small hollow container. Therefore, since the vessel wall which has structure of the invention in this application is thin and supple, in case the container which became empty is discarded, a container can be crushed easily.

[0017]

[Effect of the Invention] by having made it a configuration which was described above, being able to make wall thickness of a pars basilaris ossis occipitalis thin to same extent as the wall thickness of a drum section, and maintaining reinforcement also to a fall impact except for the submergence section of a container, obtains this invention, and it comes out of it. It is also possible to fabricate a small container, since this invention is the dress bottle fabricated using the single resin ingredient, it can press down a manufacturing cost low compared with a base cup method, and RISAKURU of a raw material resource is easy for it.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the side elevation showing the whole hollow container of this invention.

[Drawing 2] It is the side elevation showing the conventional whole hollow container.

[Drawing 3] It is the side elevation showing the advanced technology of this invention.

[Brief Description of Notations]

1 Hollow Container

2 Drum Section of Container

3 Pars Basilaris Osis Occipitalis of Container

3a Submergence section

3b Central bottom wall section

3c Reinforcing rib

4 Shoulder of Container

5 Top Neck Part of Container

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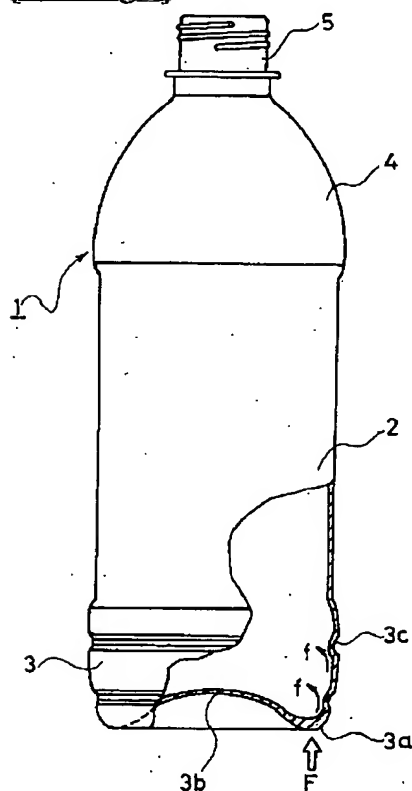
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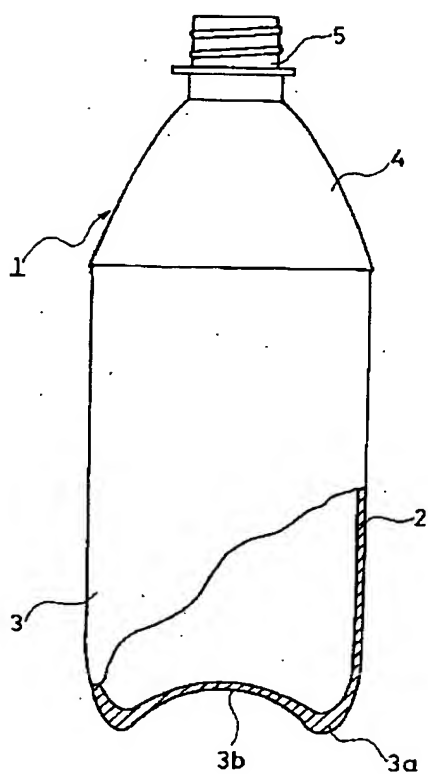
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[Drawing 1]

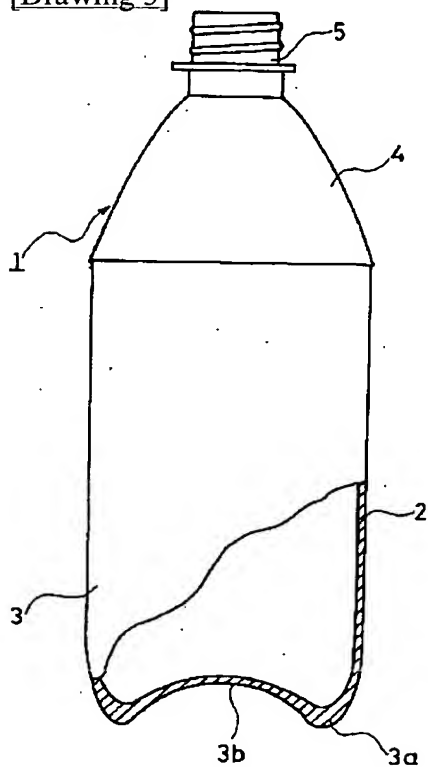


[Drawing 3]

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[Drawing 3]



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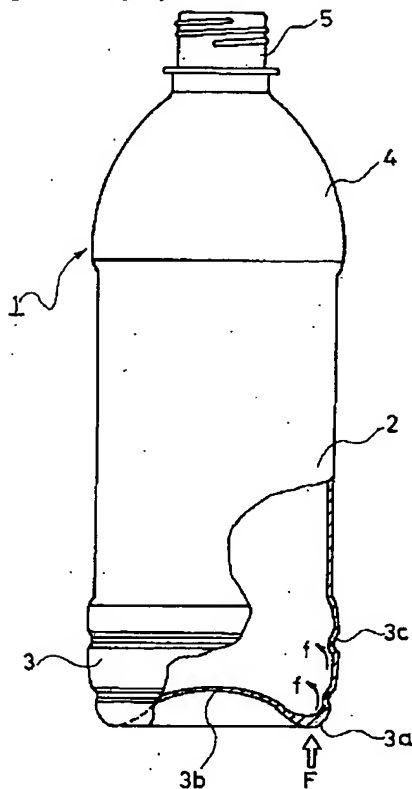
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DRAWINGS

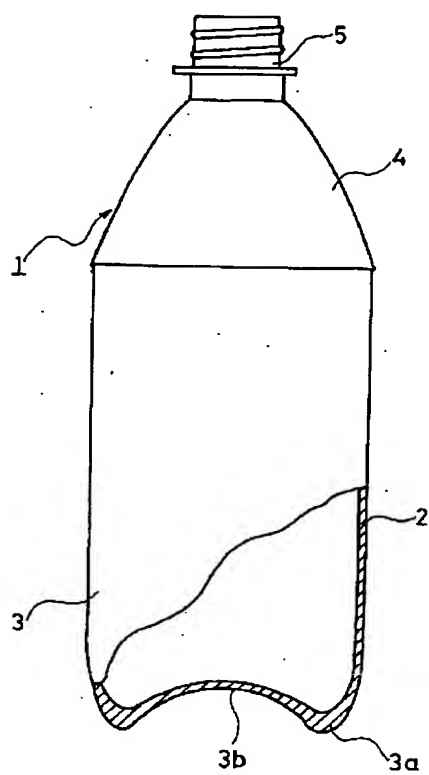
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[Drawing 1]

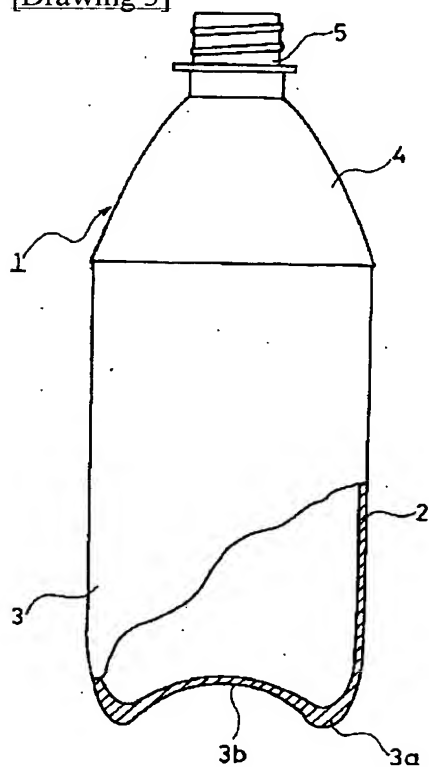


[Drawing 3]

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[Drawing 3]



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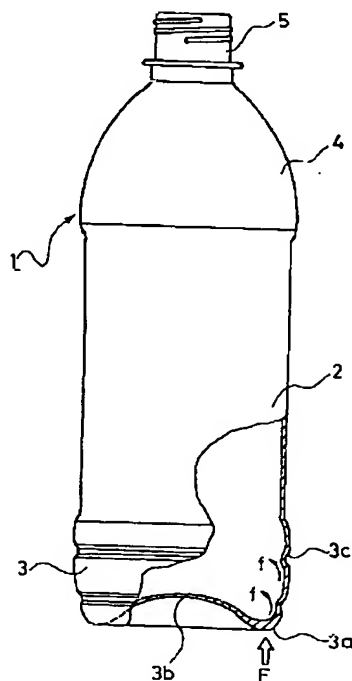
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(54) 【発明の名称】 合成樹脂製の超薄肉中空容器

(57) 【要約】

【課題】 ポリプロピレンやポリエチレンテレフタレート等の熱可塑性樹脂からなる2軸延伸成形中空容器に於いて、容器の壁厚が超薄肉に形成され、且つ、落下衝撃に対しても強い構造をして、リサイクルが容易で安定した自立性を有するワンピース型の中空容器。

【解決手段】 熱可塑性合成樹脂を2軸延伸ブロー成形により口頸部5、肩部4、胴部2及び底部3とからなる壺状に形成した中空容器に於いて、前記底部壁3を内側へ湾曲した球面状に形成すると共に着底部3aのみを肉厚に形成して、着底部を除いた肩部、胴部及び底部を2軸延伸せしめて超薄肉に形成すると共に、底部外周壁に内側へ凹溝状をしたリブ3cを形成して、落下衝撃力を分散吸収するようにした自立型の中空容器に構成する。



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## 【特許請求の範囲】

【請求項1】 熱可塑性合成樹脂を2軸延伸ブロー成形により口頸部、肩部、胴部及び底部とからなる円筒状に成形した中空容器であって、前記底部壁を内側へ湾曲した球面状に形成した底部周縁の着底部のみを肉厚に形成すると共に、該着底部以外の肩部、胴部及び底部の容器壁を2軸延伸せしめて超薄肉に形成してなり、且つ、前記底部壁の外周面には凹溝状をした補強リブを形成してなることを特徴とする自立可能な合成樹脂製の超薄肉中空容器。

【請求項2】 前記中空容器は、ポリプロピレン樹脂を2軸延伸ブロー成形してなることを特徴とする請求項1に記載した自立可能な合成樹脂製の超薄肉中空容器。

【請求項3】 前記底部壁の外周面には補強リブが複数条形成されてなることを特徴とする請求項1または2に記載する自立可能な合成樹脂製の超薄肉中空容器。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】本発明は、熱可塑性合成樹脂を2軸延伸ブロー成形した容器壁が超薄肉の中空容器に係わり、更に詳しくは、ポリプロピレンやポリエチレンテレフタレート等の熱可塑性樹脂を2軸延伸ブロー成形して、底部が落下衝撃に対して強い構造を有する円筒状をした超薄肉の中空容器に関するものである。

## 【0002】

【従来の技術】ポリエチレンテレフタレート樹脂（PET樹脂）を2軸延伸ブロー成形して得られた中空容器は、軽量で透明性に優れ、他の樹脂製の容器に比べて強度も大きく、また、耐熱性もあって、経時変化も少なく、食品衛生上からも安全であるから、サイダーやコーラその他の炭酸ガスを含む飲料用容器、ジュースその他の液体食品容器として広く採用されているのは周知の事実である。そして、上記の飲料用容器は通常円筒形をした自立可能な壺形容器に成形されたものであるが、飲料溶液を充填した後の種々の環境条件により内溶液に含まれる炭酸ガスの内圧により膨張して変形し、特に底部が変形し易くて、そのままでは容器を安定して自立させることができなくなるという問題がある。

【0003】そこで、このような容器の変形を防止するために、従来の容器は胴壁が内圧に耐え得る肉厚に成形されていたが、近年の容器の大量使用につれて容器の胴壁の肉厚を薄くしたコストの低減が図られるようになった。ところで、円筒形をした容器は、その力学的な構造上から胴部壁は薄くしてもある程度の耐圧性を持たせることができるが、底部は薄くなれば荷重や落下衝撃に耐えられなくなる恐れがあるので、肉厚が薄い容器を形成するには耐圧性を持った底部構造にしなければならない。

【0004】そして、このような容器の底部を強化するには、実開昭59-118729号及び実開昭62-3

3529号公報等に応示するように、容器の底部を外側へ半球状に膨出させる方法や特開昭51-53566号公報及び実開昭58-73710号公報等に応示するように、容器の底部をシャンパン用壺のように内側へ上げ底状に凹ませる方法が従来から多用されている。前者のように、容器の底部を半球状に膨出させた構造にしたものは、強度的には最も優れた構造であるから容器壁を肉厚に形成することができるが、そのままの状態では自立させることができないので、実開昭59-118729号公報や実開昭62-33529号公報に記載するように、容器本体とは別体に成形したベースカップを本体の底部に装着する方法が用いられている。

【0005】しかし、ベースカップを容器本体の底部に装着した壺体は、底部も十分に延伸成形されているので、内部からの圧力に対して高い耐圧性を発揮することができる利点はあるが、ベースカップは容器本体とは別体に別部材として成形すると共に、容器本体にベースカップを装着するための専用の作業工程を必要とするのでコスト高となる欠点がある。そして、上記のベースカップは容器本体とは異なる合成樹脂材料で成形したのが一般的にであるから、最近求められている省資源化やリサイクル化等の面からいささか問題があり、また、このようにベースカップを装着するのは大型の容器には適しているが、小型の容器にとっては背丈が高くなるので不向きである。

【0006】また、後者のように、容器の底部をシャンパン用壺のように内側へ上げ底状に湾曲させた構造にしたものは、底部に環状の着底部が形成されているので容器は自立させることはできて、小型の容器にも適用することは可能である。しかし、その実体は図2に見るように、容器の胴部2に比べて底部壁には十分な延伸操作が施されずに、底壁中心部3bは肉厚に形成されるので強度的に劣ったものとなり、反対に衝撃を受け易い環状の着底部3aが肉薄に成形されて強度が最も弱い形になるので、耐圧性を持たせるために容器壁全体をベースカップ容器よりも肉厚に形成したり、胴部2の下部から底部3の着座部3aかけての壁面に縦方向の補強リブを多数条形成する手段が取られているが、補強リブを形成するには手間がかかるし、また、リブのために意匠性を損なう欠点があった。

【0007】そこで、近年になって上記のように底部ベースカップを装着する代わりに、特公昭64-10329号公報や特開平5-254529号公報に記載するように、曲面状に形成した容器本体の底部に脚部を一体に膨出成形して自立性を持たせた耐圧容器、所謂ワンピースボトルが採用されるようになってきた。しかしながら、このような形状に脚部を形成した容器の底壁は、容器の上部壁及び胴部壁に比べて2軸延伸操作が不十分で肉厚となり、十分に2軸延伸された前記壁部に比較して変形し易く、内容物を充填して密封した後の加熱殺菌や

移送その他の外的環境の変化に起因した底部が膨出変形するロッカーボトムや底部に亀裂を生ずる現象が発生し易いという欠点があり、また、このような構造は大型の容器には適用できるが、小型の容器には不向きである。

【0008】そこで、前記したシャンパン用壺のように容器の底部を内側へ上げ底状に湾曲せしめて自立可能にした中空容器に於いて、容器の着底部分のみを肉厚に形成して、内側に湾曲せしめた底壁部は胴部と同じように延伸操作を施すことにより、底部にも胴部と同じ程度の耐圧強度を付与することが可能となり、小型の容器にも適用することができることを見出して、出願人は先に実開昭58-73710号として提案している。即ち、パリソンの加熱温度と容器壁の延伸度の相対関係を予め求めておき、胴部2等の他部を規定に延伸するため規定温度に加熱する時、容器底部3の着座部3aの温度を、延伸後にその部分の肉厚が底部3の中心部及び上縁部の略4倍程度の肉厚となる低延伸度の温度に制御することにより、図3に示すように、R形状に容器の底部3を2軸延伸して、底部の着座部3aの肉厚のみを胴部2や底部3、肩部4の壁厚よりも充分に肉厚になるようにパリソンを2軸延伸ブロー成形した強い耐圧底を有する中空容器1を得ることができる。

【0009】しかし、上記のようにして2軸延伸成形を行って得られる中空容器は、その壁厚を従来のものに比べて薄くすることは可能であるが、壁厚を薄くするにも底部の強度上から自ずから限界があり、また、壁厚を薄くした容器は落下衝撃を受けた場合に、底部以外の胴部や肩部が破裂するなどして、落下衝撃に対しての強度が弱いという欠点があって、超薄肉容器を形成するに当たってはその解決策が求められていた。

【0010】

【発明が解決しようとする課題】本発明は、ポリプロピレンやポリエチレンテレフタレート等の熱可塑性樹脂からなるパリソンまたはプリフォームを2軸延伸ブロー成形したワンピースボトル型の自立可能な中空容器に於いて、容器の壁厚を超薄肉に形成すると共に、容器壁を落下衝撃に対しても強い構造にして、容器の底部が丈夫でロッカーボトムや亀裂が発生することなく、安定した自立性を有し、低コストで、リサイクルが容易な容器を提供する。

【0011】

【課題を解決するための手段】熱可塑性合成樹脂を2軸延伸ブロー成形により口頸部、肩部、胴部及び底部とからなる壺状をした中空容器を成形して、前記底部壁を内側へ湾曲した球面状に形成すると共に着底部を肉厚に形成して、着底部を除いた肩部、胴部及び底部を2軸延伸せしめて超薄肉に形成すると共に底部外側面に内側へ凹溝をしたリブを形成して、耐落下衝撃性に優れた自立型の中空容器を構成する。

【0012】

【発明の実施の形態】本願発明は、容器の底部の中央部3bを内側へ上げ底状に湾曲せしめてシャンパン用壺のように自立可能な中空容器1をブロー成形するに際して、図2に示した従来のように、容器の胴部2に比べて底部3が充分に延伸されずに、底部の中心部3bが肉厚に形成されないようにするために、図3に示すように、予め最終成形品に対応させて成形したパリソンまたはプリフォームの加熱温度を制御して、底部の着座部3aのみを他部よりも肉厚に成形して、図1に示すように、肩部4、胴部2及び底部3の壁厚が超薄肉となるように充分に2軸延伸すると共に、底部3の外周面に凹溝状の補強リブ3cを形成して、容器が落下した場合の衝撃力を吸収するようにすると共に自立性可能な中空容器1にブロー成形する。

【0013】

【実施例】本発明は、ポリプロピレンまたはポリエチレンテレフタレート（PET）樹脂を射出成形により概略試験管状をした所定形状のプリフォームに予め成形して、該プリフォームを延伸成形が可能な温度に加熱してから、ブロー成形用金型内にセットした後型締めして、プリフォームを縦方向に延伸操作をすると共にブロー成形して膨出形成せしめて2軸延伸成形を行って、図1に示すように内側へ湾曲せしめた底部壁にも胴部と同じように充分な延伸操作が施された薄肉構造をした耐落下衝撃性を有する自立可能な中空容器に成形する。

【0014】即ち、口頸部5、肩部4、胴部2及び底部3とからなる壺状をした中空容器1を成形するに際して、前記底部3は中央壁部3cを内側へ球面状に湾曲せしめて形成すると共に着底部分3aを肉厚に形成して、前記着底部分3aを除いた肩部4、胴部2及び底部3を2軸延伸せしめて、壁厚が超薄肉になるようにブロー成形すると同時に底部3の外側面に内側へ凹溝状をしたリブ3cを複数条形成して自立可能な中空容器1となす。

【0015】上記のような構成をした本発明の容器1は、着底部分3aを除いて底部3にも胴部4と同様に2軸延伸成形を施して強度をあげたので、壁厚全体をこれまでよりも超薄肉に形成することができて、また、底部3の外側面には凹状リブ3cを複数条形成したことにより、容器を落下させても衝撃力はリブ部分の伸縮作用と内側への力分散fとの二つの相乗効果により吸収されて、容器壁に直接作用する衝撃力が緩和されるので、容器が破裂することもない。特に、ポリプロピレン樹脂を用いて成形した本願発明の中空容器は、延伸強度が大きくて、丈夫にできるので、容器壁を従来のものに比べて非常に薄くすることが可能となり、廃棄時には簡単に押し潰すことができる。

【0016】以上述べたように本願発明は、中空容器の底部を内側へ上げ底状に湾曲せしめた底壁周縁部の着座部のみをやや肉厚に形成した以外は、容器壁全般に充分な延伸操作を施して肉厚を薄くしたものであるから、従

来の中空容器に比べて容器壁の強度は増大されており、また、底部外周壁にのみ円周方向の凹状補強リブを設けて落下衝撃力を分散吸収する構造をしたものであるから、小型の中空容器にも適したものである。従って、本願発明の構造をした容器壁は薄くて柔軟性があるので、空になった容器を廃棄する際に容器を容易に押し潰すことができる。

【0017】

【発明の効果】本発明は、以上述べたような構成にしたことにより、容器の着底部を除いて、底部の壁厚を胴部の壁厚と同じ程度に薄くすることができて、また、落下衝撃に対しても強度を維持することがかのである。本発明は、小型の容器を成形することも可能であり、単一の樹脂材料を用いて成形したワンピースボトルであるから、製造コストをベースカップ方式に比べて低く抑さえ

ることができ、また、原料資源のリサイクルが容易である。

【図面の簡単な説明】

【図1】本発明の中空容器全体を示す側面図である。

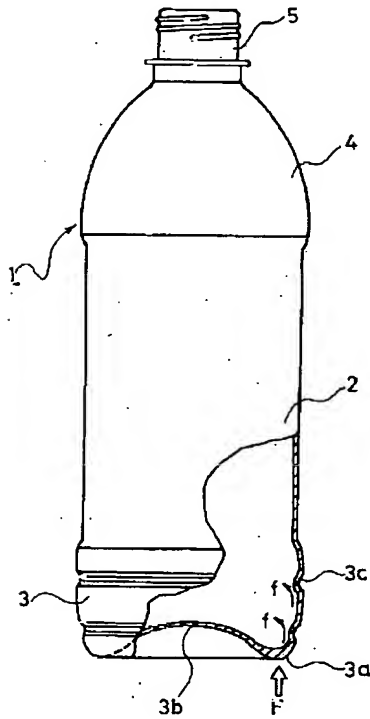
【図2】従来の中空容器全体を示す側面図である。

【図3】本発明の先行技術を示す側面図である。

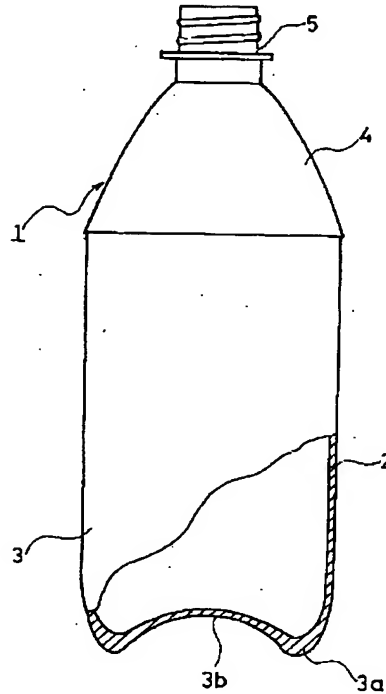
【符号の簡単な説明】

- 1 中空容器
- 2 容器の胴部
- 3 容器の底部
- 3a 着底部
- 3b 中央底壁部
- 3c 補強リブ
- 4 容器の肩部
- 5 容器の口頸部

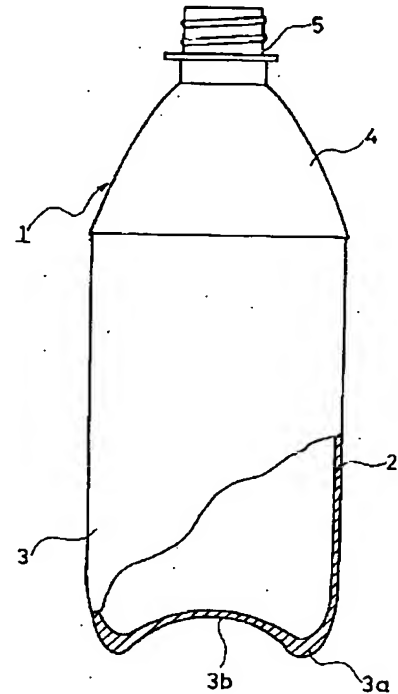
【図1】



【図2】



【図3】



【手続補正書】

【提出日】平成8年12月26日

【手続補正1】

【補正対象書類名】図面

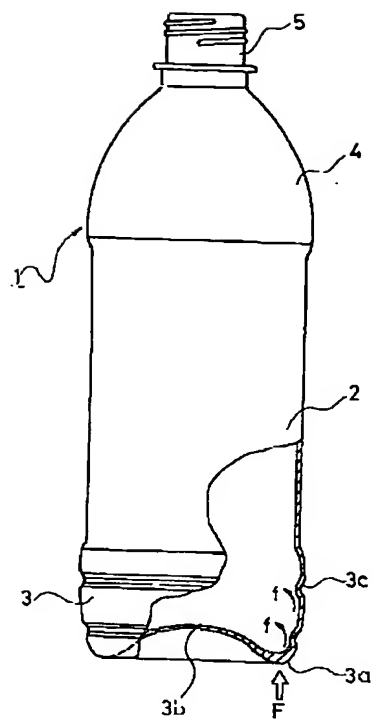
【補正対象項目名】全図

【補正方法】変更

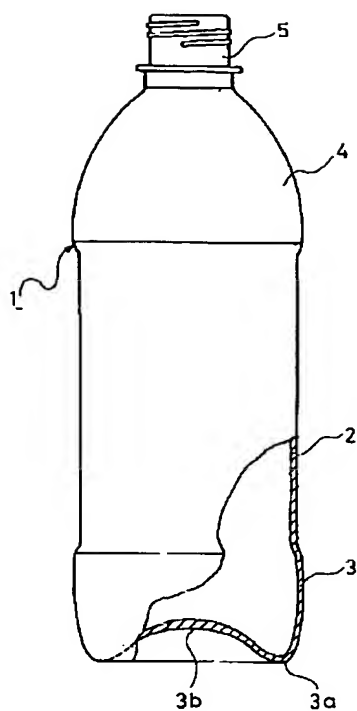
【補正内容】



【図 1】



【図 2】



【図 3】

